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OX40 expressed on fresh leukemic cells from adult T-cell leukemia patients mediates cell adhesion to vascular endothelial cells: implication for the possible involvement of OX40 in leukemic cell infiltration.

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We demonstrated previously that OX40 and its ligand, gp34, directly mediate adhesion of activated normal CD4+ T cells, as well as human T-cell leukemia virus type I (HTLV-I)-transformed T cells to vascular endothelial cells. In the present study, we examined expression of OX40 on fresh leukemic cells from patients with adult T-cell leukemia (ATL) and its possible involvement in cel adhesion. Flow cytometric analysis showed that peripheral blood mononuclear cells (PBMC) or lymph node tumor cells from 15 of 17 cases expressed significant levels of OX40 without stimulation. On the other hand, gp34 was not expressed on these cells, although its expression is also known to be associated with HTLV-I-infection. In Western blot analysis, a 50-kD protein band was detected by anti-OX40 monoclonal antibody (MoAb) in two ATL cases examined, as well as phytohemagglutinin (PHA) blasts and Hut102, an HTLV-I-infected T-cell line, but not in resting PBMC or Jurkat. Expression of OX40 mRNA was shown by reverse transcriptase-polymerase chain reaction in all ATL cases tested, PHA-blasts, and Hut102, but not in resting PBMC or Jurkat. We could not detect expression of HTLV-I viral mRNA in any of the cases tested. Cell adhesion assay was performed and in at least three cases, fresh ATL cells exhibited adhesion to human umbilical vein endothelial cells that could be considerably inhibited by either anti-OX40 MoAb or anti-gp34 MoAb. Immunohistochemical staining of skin biopsy specimens indicated that infiltrating mononuclear cells express OX40 in vivo. Taken together, these data indicate that leukemic cells from most, bu not all, ATL patients constitutively express OX40, which may play a role in leukemic cell infiltration in addition to cell adhesion in vivo.

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